

I claim:

1  
2 *sub 1* 1. A method of prefetching one or more Internet resources referenced in one or  
3 more Web pages, said method comprising the steps of:

4 obtaining an estimated round trip time for said Internet resources; and  
5 prefetching said Internet resources based on said estimated round trip time.

1 2. The method according to claim 1, wherein two or more of said Internet  
2 resources are prefetched substantially in parallel.

1 3. The method according to claim 1, wherein said step of prefetching said  
2 Internet resources based on said estimated round trip time is performed only for Internet  
3 resources associated with origin servers that have been previously accessed and said method  
4 further comprising the step of prefetching all Internet resources associated with servers that have  
5 not been previously accessed.

1 4. The method according to claim 1, wherein said estimated round trip time for  
2 each Internet resource is based on average access time statistics for the corresponding origin  
3 server and the actual size of said Internet resource when said actual size is available.

1 5. The method according to claim 4, wherein said estimated round trip time for  
2 each Internet resource is based on average access time statistics for the corresponding origin  
3 server and the average size of Internet resources provided by said origin server if said origin  
4 server does not indicate said actual size.

1 6. The method according to claim 4, wherein said estimated round trip time for  
2 each Internet resource is based on average access time statistics for the corresponding origin  
3 server and the average size of Internet resources provided by said origin server if the setup and

4 wait time for accessing said origin server is not significantly less than the average round trip time  
5 for Internet resources obtained from said origin server.

1 7. The method according to claim 1, wherein said estimated round trip time is  
2 based on at least one actual prior round trip time for said Internet resource.

1 8. The method according to claim 1, wherein said step of prefetching said  
2 Internet resources does not begin until said one or more Web pages have been fetched.

1 9. The method according to claim 1, wherein said step of prefetching said  
2 Internet resources continues until said Internet resources have been prefetched or until a user  
3 selects a new Web page.

1 10. The method according to claim 1, further comprising the steps of storing said  
2 Internet resources in a cache and determining if any of said Internet resources are already stored  
3 in said cache before prefetching begins.

1 11. The method according to claim 1, further comprising the step of applying a  
2 filter to said Internet resources to reduce the overhead on network, server or local resources due  
3 to prefetching.

1 12. The method according to claim 11, wherein said filter discards all Internet  
2 resources that do not use the HTTP protocol for transmission.

1 13. The method according to claim 11, wherein said filter discards all Internet  
2 resources that corresponding to dynamically generated Web resources.

1 14. The method according to claim 11, wherein said filter discards all Internet  
2 resources that correspond to resources whose size is more than a certain maximum size threshold.

1 15. The method according to claim 11, wherein said filter discards all Internet  
2 resources that correspond to resources whose estimated round trip time is longer than a certain  
3 maximum time.

1 16. The method according to claim 11, wherein said filter discards all Internet  
2 resources that correspond to resources whose estimated round trip time is shorter than a certain  
3 minimum time threshold.

1 17. A method of prefetching one or more Internet resources referenced in one or  
2 more Web pages, said method comprising the steps of:  
3 determining an estimated round trip time for said Internet resources;  
4 sorting a list of said Internet resources based on said estimated round trip time;  
5 prefetching said sorted list of Internet resources until one or more predefined  
6 threshold conditions are met.

1 18. The method according to claim 17, wherein two or more of said Internet  
2 resources are prefetched substantially in parallel.

1 19. The method according to claim 17, wherein said step of prefetching said  
2 Internet resources based on said estimated round trip time is performed only for resources  
3 associated with origin servers that have been previously accessed and said method further  
4 comprising the step of prefetching all resources associated with servers that have not been  
5 previously accessed.

1 20. The method according to claim 17, wherein said estimated round trip time for  
2 each Internet resource is based on average access time statistics for the corresponding origin  
3 server and the actual size of said Internet resource when said actual size is available.

1           21. The method according to claim 20, wherein said estimated round trip time for  
2 each Internet resource is based on average access time statistics for the corresponding origin  
3 server and the average size of Internet resources provided by said origin server if said origin  
4 server does not indicate said actual size.

1           22. The method according to claim 20, wherein said estimated round trip time for  
2 each Internet resource is based on average access time statistics for the corresponding origin  
3 server and the average size of Internet resources provided by said origin server if the setup and  
4 wait time for accessing said origin server is not significantly less than the average round trip time  
5 for Internet resources obtained from said origin server.

1           23. The method according to claim 20, further comprising the step of applying a  
2 filter to said Internet resources to reduce the overhead on network, server or local resources due  
3 to prefetching.

1           24. The method according to claim 23, wherein said filter discards all Internet  
2 resources selected from the set comprised substantially of those Internet resources that (i) do not  
3 use the HTTP protocol for transmission; (ii) correspond to dynamically generated Web  
4 resources; (iii) correspond to resources whose size is more than a certain maximum size  
5 threshold, (iv) correspond to resources whose estimated round trip time is longer than a certain  
6 maximum time, or (v) correspond to resources whose estimated round trip time is shorter than a  
7 certain minimum time threshold.

1           25. A system for prefetching one or more Internet resources referenced in one or  
2 more Web pages, each of said Internet resources having an associated origin server, said tool  
3 comprising:

4           a memory for storing a server statistics database that records access time statistics  
5 for each origin server that has been previously accessed;

6           a processor operatively coupled to said memory, said processor configured to:

7 obtain an estimated round trip time for said Internet resources; and  
8 prefetch said Internet resources based on said estimated round trip time.

1 26. The system according to claim 25, wherein said server statistics database  
2 records the average setup, wait and byte transmission times and average resource size for said  
3 Internet resources obtained from said corresponding origin server.

1 27. A method of prefetching one or more Internet resources referenced in one or  
2 more Web pages, said method comprising the steps of:  
3 determining if one or more of said Internet resources are candidates for  
4 prefetching based on an estimated round trip time; and  
5 prefetching said Internet resources that are determined to be candidates for  
6 prefetching.

1 28. An article of manufacture for prefetching one or more Internet resources  
2 referenced in one or more Web pages, said article of manufacture comprising:  
3 a computer readable medium having computer readable program code means  
4 embodied thereon, said computer readable program code means comprising program code means  
5 for causing a computer to:  
6 obtain an estimated round trip time for said Internet resources; and  
7 prefetch said Internet resources based on said estimated round trip time.

1 29. A method of prefetching one or more Internet resources referenced in one or  
2 more Web pages, said method comprising the steps of:  
3 obtaining an estimated round trip time for said Internet resources  
4 identifying a subset of said Internet resources that are candidates for prefetching  
5 based on said estimated round trip time; and

6 determining whether to prefetch one or more of said Internet resources in said  
7 subset of Internet resources based on predefined conditions, at least one of said predefined  
8 conditions being based on said estimated round trip time.

09164509-093099